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1 [Compiler transformations for high-performance computing](#)


 David F. Bacon, Susan L. Graham, Oliver J. Sharp
 December 1994 **ACM Computing Surveys (CSUR)**, Volume 26 Issue 4

Publisher: ACM Press

Full text available: pdf(6.32 MB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

In the last three decades a large number of compiler transformations for optimizing programs have been implemented. Most optimizations for uniprocessors reduce the number of instructions executed by the program using transformations based on the analysis of scalar quantities and data-flow techniques. In contrast, optimizations for high-performance superscalar, vector, and parallel processors maximize parallelism and memory locality with transformations that rely on tracking the properties o ...

Keywords: compilation, dependence analysis, locality, multiprocessors, optimization, parallelism, superscalar processors, vectorization

2 [Implementation and performance of Munin](#)


 John B. Carter, John K. Bennett, Willy Zwaenepoel
 September 1991 **ACM SIGOPS Operating Systems Review , Proceedings of the thirteenth ACM symposium on Operating systems principles SOSP '91**, Volume 25 Issue 5

Publisher: ACM Press

Full text available: pdf(1.46 MB)

 Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Munin is a distributed shared memory (DSM) system that allows shared memory parallel programs to be executed efficiently on distributed memory multiprocessors. Munin is unique among existing DSM systems in its use of *multiple consistency protocols* and in its use of *release consistency*. In Munin, shared program variables are annotated with their expected access pattern, and these annotations are then used by the runtime system to choose a consistency protocol best suited to that acc ...

3 [System area network mapping](#)


 Brent N. Chun, Alan M. Mainwaring, Saul Schleimer, Daniel S. Wilkerson
 June 1997 **Proceedings of the ninth annual ACM symposium on Parallel algorithms and architectures**

Publisher: ACM Press

Full text available: pdf(1.67 MB)

 Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

4 The design and implementation of hierarchical software systems with reusable



components

Don Batory, Sean O'Malley

- October 1992 **ACM Transactions on Software Engineering and Methodology (TOSEM)**, Volume 1 Issue 4

Publisher: ACM Press

Full text available: pdf(3.15 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

We present a domain-independent model of hierarchical software system design and construction that is based on interchangeable software components and large-scale reuse. The model unifies the conceptualizations of two independent projects, Genesis and Avoca, that are successful examples of software component/building-block technologies and domain modeling. Building-block technologies exploit large-scale reuse, rely on open architecture software, and elevate the granularity of programming to ...

Keywords: domain modeling, open system architectures, reuse, software building-blocks, software design

5 A new approach to developing and implementing eager database replication



protocols

Bettina Kemme, Gustavo Alonso

September 2000 **ACM Transactions on Database Systems (TODS)**, Volume 25 Issue 3

Publisher: ACM Press

Full text available: pdf(449.43 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Database replication is traditionally seen as a way to increase the availability and performance of distributed databases. Although a large number of protocols providing data consistency and fault-tolerance have been proposed, few of these ideas have ever been used in commercial products due to their complexity and performance implications. Instead, current products allow inconsistencies and often resort to centralized approaches which eliminates some of the advantages of replication. As an ...

Keywords: database replication, fault-tolerance, group communication, isolation levels, one-copy-serializability, replica control, total error multicast

6 Dynamic voting algorithms for maintaining the consistency of a replicated database



S. Jajodia, David Mutchler

June 1990 **ACM Transactions on Database Systems (TODS)**, Volume 15 Issue 2

Publisher: ACM Press

Full text available: pdf(4.07 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

There are several replica control algorithms for managing replicated files in the face of network partitioning due to site or communication link failures. Pessimistic algorithms ensure consistency at the price of reduced availability; they permit at most one (distinguished) partition to process updates at any given time. The best known pessimistic algorithm, voting, is a "static" algorithm, meaning that all potential distinguished partitions can be listed in adv ...

7 Linearity and the pi-calculus



Naoki Kobayashi, Benjamin C. Pierce, David N. Turner

January 1996 **Proceedings of the 23rd ACM SIGPLAN-SIGACT symposium on Principles of programming languages POPL '96**

Publisher: ACM Press

Full text available: pdf(1.53 MB)

Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

8 Parallel logic simulation of VLSI systems

Mary L. Bailey, Jack V. Briner, Roger D. Chamberlain

September 1994 **ACM Computing Surveys (CSUR)**, Volume 26 Issue 3**Publisher:** ACM Press

Full text available: pdf(3.74 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Fast, efficient logic simulators are an essential tool in modern VLSI system design. Logic simulation is used extensively for design verification prior to fabrication, and as VLSI systems grow in size, the execution time required by simulation is becoming more and more significant. Faster logic simulators will have an appreciable economic impact, speeding time to market while ensuring more thorough system design testing. One approach to this problem is to utilize parallel processing, taking ...

Keywords: circuit structure, parallel architecture, parallelism, partitioning, synchronization algorithm, timing granularity

9 An adaptive data replication algorithm

Ouri Wolfson, Sushil Jajodia, Yixiu Huang

June 1997 **ACM Transactions on Database Systems (TODS)**, Volume 22 Issue 2**Publisher:** ACM Press

Full text available: pdf(911.08 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This article addresses the performance of distributed database systems. Specifically, we present an algorithm for dynamic replication of an object in distributed systems. The algorithm is adaptive in the sense that it changes the replication scheme of the object i.e., the set of processors at which the object is replicated) as changes occur in the read-write pattern of the object (i.e., the number of reads and writes issued by each processor). The algorithm continuously moves the replication ...

Keywords: computer networks, dynamic data allocation, file allocation, replicated data

10 Fast detection of communication patterns in distributed executions

Thomas Kunz, Michiel F. H. Seuren

November 1997 **Proceedings of the 1997 conference of the Centre for Advanced Studies on Collaborative research****Publisher:** IBM Press

Full text available: pdf(4.21 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Understanding distributed applications is a tedious and difficult task. Visualizations based on process-time diagrams are often used to obtain a better understanding of the execution of the application. The visualization tool we use is Poet, an event tracer developed at the University of Waterloo. However, these diagrams are often very complex and do not provide the user with the desired overview of the application. In our experience, such tools display repeated occurrences of non-trivial commun ...

11 Proceedings of the SIGNUM conference on the programming environment for development of numerical softwareMarch 1979 **ACM SIGNUM Newsletter**, Volume 14 Issue 1**Publisher:** ACM Press

Full text available: pdf(5.02 MB)

Additional Information: [full citation](#)12 A Majority consensus approach to concurrency control for multiple copy databases



Robert H. Thomas

June 1979 **ACM Transactions on Database Systems (TODS)**, Volume 4 Issue 2

Publisher: ACM Press

Full text available: pdf(2.32 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A "majority consensus" algorithm which represents a new solution to the update synchronization problem for multiple copy databases is presented. The algorithm embodies distributed control and can function effectively in the presence of communication and database site outages. The correctness of the algorithm is demonstrated and the cost of using it is analyzed. Several examples that illustrate aspects of the algorithm operation are included in the Appendix.

Keywords: clock synchronization, computer networks, concurrency control, distributed computation, distributed control, distributed databases, multiprocess systems, update synchronization

13 [Are quorums an alternative for data replication?](#)



Ricardo Jiménez-Peris, M. Patiño-Martínez, Gustavo Alonso, Bettina Kemme

September 2003 **ACM Transactions on Database Systems (TODS)**, Volume 28 Issue 3

Publisher: ACM Press

Full text available: pdf(2.23 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Data replication is playing an increasingly important role in the design of parallel information systems. In particular, the widespread use of cluster architectures often requires to replicate data for performance and availability reasons. However, maintaining the consistency of the different replicas is known to cause severe scalability problems. To address this limitation, quorums are often suggested as a way to reduce the overall overhead of replication. In this article, we analyze several qu ...

Keywords: Data replication, availability, distributed transactions., quorums, scalability

14 [Predictive dynamic load balancing of parallel and distributed rule and query](#)

[processing](#)

Hasanat M. Dewan, Salvatore J. Stolfo, Mauricio Hernández, Jae-Jun Hwang

May 1994 **ACM SIGMOD Record , Proceedings of the 1994 ACM SIGMOD international conference on Management of data SIGMOD '94**, Volume 23 Issue 2

Publisher: ACM Press

Full text available: pdf(1.37 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Expert Databases are environments that support the processing of rule programs against a disk resident database. They occupy a position intermediate between active and deductive databases, with respect to the level of abstraction of the underlying rule language. The operational semantics of the rule language influences the problem solving strategy, while the architecture of the processing environment determines efficiency and scalability. In this paper, we present elements of the ...

15 [Paradigms for process interaction in distributed programs](#)



Gregory R. Andrews

March 1991 **ACM Computing Surveys (CSUR)**, Volume 23 Issue 1

Publisher: ACM Press

Full text available: pdf(3.77 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Distributed computations are concurrent programs in which processes communicate by message passing. Such programs typically execute on network architectures such as networks of workstations or distributed memory parallel machines (i.e., multicomputers such as hypercubes). Several paradigms—examples or models—for process interaction in

distributed computations are described. These include networks of filters, clients, and servers, heartbeat algorithms, probe/echo algorithms, broa ...

Keywords: clients and servers, distributed and parallel algorithms, distributed programming, distributed programming methods, heartbeat algorithms, networks of filters, patterns for interprocess communication, probe/echo algorithms, replicated servers, token-passing algorithms

16 Management of a remote backup copy for disaster recovery



Richard P. King, Nagui Halim, Hector Garcia-Molina, Christos A. Polyzois
May 1991 **ACM Transactions on Database Systems (TODS)**, Volume 16 Issue 2

Publisher: ACM Press

Full text available: pdf(2.48 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

A remote backup database system tracks the state of a primary system, taking over transaction processing when disaster hits the primary site. The primary and backup sites are physically isolated so that failures at one site are unlikely to propagate to the other. For correctness, the execution schedule at the backup must be equivalent to that at the primary. When the primary and backup sites contain a single processor, it is easy to achieve this property. However, this is harder to do when ...

Keywords: database initialization, hot spare, hot standby, remote backup

17 GPGPU: general purpose computation on graphics hardware



David Luebke, Mark Harris, Jens Krüger, Tim Purcell, Naga Govindaraju, Ian Buck, Cliff Woolley, Aaron Lefohn

August 2004 **Proceedings of the conference on SIGGRAPH 2004 course notes GRAPH '04**

Publisher: ACM Press

Full text available: pdf(63.03 MB)

Additional Information: [full citation](#), [abstract](#)

The graphics processor (GPU) on today's commodity video cards has evolved into an extremely powerful and flexible processor. The latest graphics architectures provide tremendous memory bandwidth and computational horsepower, with fully programmable vertex and pixel processing units that support vector operations up to full IEEE floating point precision. High level languages have emerged for graphics hardware, making this computational power accessible. Architecturally, GPUs are highly parallel s ...

18 Practical byzantine fault tolerance and proactive recovery



Miguel Castro, Barbara Liskov

November 2002 **ACM Transactions on Computer Systems (TOCS)**, Volume 20 Issue 4

Publisher: ACM Press

Full text available: pdf(1.63 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Our growing reliance on online services accessible on the Internet demands highly available systems that provide correct service without interruptions. Software bugs, operator mistakes, and malicious attacks are a major cause of service interruptions and they can cause arbitrary behavior, that is, Byzantine faults. This article describes a new replication algorithm, BFT, that can be used to build highly available systems that tolerate Byzantine faults. BFT can be used in practice to implement re ...

Keywords: Byzantine fault tolerance, asynchronous systems, proactive recovery, state machine replication, state transfer

19

Mixed consistency: a model for parallel programming (extended abstract)



Divyakant Agrawal, Manhoi Choy, Hong Va Leong, Ambuj K. Singh

August 1994 **Proceedings of the thirteenth annual ACM symposium on Principles of distributed computing****Publisher:** ACM PressFull text available: pdf(1.21 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**20** [Implementing sequentially consistent shared objects using broadcast and point-to-point communication](#)

Alan Fekete, M. Frans Kaashoek, Nancy Lynch

January 1998 **Journal of the ACM (JACM)**, Volume 45 Issue 1**Publisher:** ACM PressFull text available: pdf(257.13 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents and proves correct a distributed algorithm that implements a sequentially consistent collection of shared read/update objects. This algorithm is a generalization of one used in the Orca shared object system. The algorithm caches objects in the local memory of processors according to application needs; each read operation accesses a single copy of the object, while each update accesses all copies. The algorithm uses broadcast communication when it sends messages to replic ...

Keywords: Orca programming language, distributed shared memory, formal methods, input/output automata, ordered multicast, replicated data

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IEEE CNF	IEEE Conference Proceeding
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 Brasileiro, F.V.; Ezhilchelvan, P.D.; Shrivastava, S.K.; Speirs, N.A.; Tao, S.;
[Computers, IEEE Transactions on](#)
 Volume 45, Issue 11, Nov. 1996 Page(s):1226 - 1238
 Digital Object Identifier 10.1109/12.544479
[AbstractPlus](#) | [References](#) | Full Text: [PDF](#)(1652 KB) IEEE JNL
[Rights and Permissions](#)
- ☐ 2. **Applying coloured Petri nets to analyze fail silent nodes in distributed systems**
 Sampaio, L.M.R.; de Figueiredo, J.C.A.; Brasileiro, F.V.;
[Systems, Man, and Cybernetics, 1998. 1998 IEEE International Conference on](#)
 Volume 1, 11-14 Oct 1998 Page(s):268 - 273 vol.1
 Digital Object Identifier 10.1109/ICSMC.1998.725420
[AbstractPlus](#) | Full Text: [PDF](#)(540 KB) IEEE CNF
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- ☐ 3. **Multistep interactive convergence: an efficient approach to the fault-tolerant clock synchronization of large multicomputers**
 de Azevedo, M.M.; Blough, D.M.;
[Parallel and Distributed Systems, IEEE Transactions on](#)
 Volume 9, Issue 12, Dec. 1998 Page(s):1195 - 1212
 Digital Object Identifier 10.1109/71.737696
[AbstractPlus](#) | [References](#) | Full Text: [PDF](#)(368 KB) IEEE JNL
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- ☐ 4. **Why secure applications are difficult to write**
 Whittaker, J.;
[Security & Privacy Magazine, IEEE](#)
 Volume 1, Issue 2, Mar-Apr 2003 Page(s):81 - 83
 Digital Object Identifier 10.1109/MSECP.2003.1193218
[AbstractPlus](#) | Full Text: [PDF](#)(305 KB) IEEE JNL
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 Radziejewski, I.R.; Lo, E.; Hardy, R.H.S.; Leung, A.M.;
[Computers and Digital Techniques, IEE Proceedings-](#)
 Volume 137, Issue 6, Nov 1990 Page(s):421 - 426
[AbstractPlus](#) | Full Text: [PDF](#)(532 KB) IEE JNL
- ☐ 6. **An LDPC decoding schedule for memory access reduction**
 Gunnam, K.; Gwan Choi; Yeary, M.;

Acoustics, Speech, and Signal Processing, 2004. Proceedings. (ICASSP '04). IEEE International Conference on
Volume 5, 17-21 May 2004 Page(s):V - 173-6 vol.5
Digital Object Identifier 10.1109/ICASSP.2004.1327075
[AbstractPlus](#) | Full Text: [PDF\(253 KB\)](#) IEEE CNF
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Parallel and Distributed Simulation, 2003. (PADS 2003). Proceedings. Seventeenth Workshop on
10-13 June 2003 Page(s):11 - 20
Digital Object Identifier 10.1109/PADS.2003.1207416
[AbstractPlus](#) | Full Text: [PDF\(438 KB\)](#) IEEE CNF
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8. Application intrusion detection using language library calls

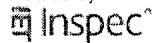
Jones, A.K.; Yu Lin;
Computer Security Applications Conference, 2001. ACSAC 2001. Proceedings 17th Annual
10-14 Dec. 2001 Page(s):442 - 449
[AbstractPlus](#) | Full Text: [PDF\(211 KB\)](#) IEEE CNF
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9. Parallel Retrograde Analysis on a Distributed System

Bal, H.; Allis, V.;
Supercomputing, 1995. Proceedings of the IEEE/ACM SC95 Conference
1995 Page(s):73 - 73
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